

# TOPPY MONITOR TAP

Currently Version B1

## 1 INTRODUCTION

This TAP is intended to provide a facility for monitoring various aspects of the Topy operation while using the Topy relatively normally. The aspects of this TAP that are thought to be unique are:

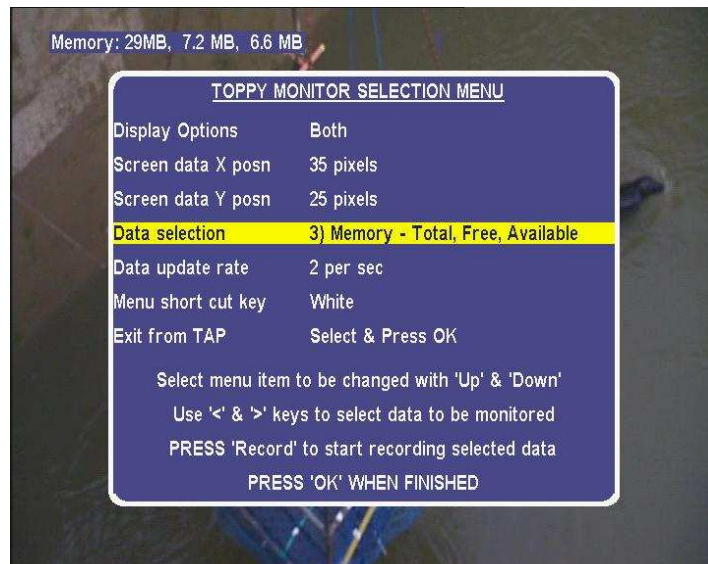
- The ability to display the results either as an on-screen message or using the front panel display, or both. The front panel display is less friendly, but has less impact on family viewing.
- The wide range of parameters which can be monitored.

It has been primarily developed to help in the development of other TAPs, but may be of use to normal users who have problems with their Topy.

## 2 USE

Download the TAP from [here](#), unzip the file, and install "TopyMonitor.tap" in whichever subdirectory of the "ProgramFiles" directory you wish to use.

To select the data you wish to monitor etc, press "Menu" to bring up the Topy menu, followed by "Info" to bring up the Topy Monitor menu. Within that menu you can select the data, where it is to be displayed, and the update frequency. You can also set up a shortcut key to bring up the menu to avoid using Menu/Info each time you wish to change a selection.



Note that selection changes take effect immediately, and are saved to hard disc when "OK" is pressed for use next time the TAP is loaded.

N.B. The displayed colours will depend on the "Skin" file used – see section 6 below.

### 3 MONITORED DATA

The options for data to be monitored are:

1. Last keypress Parameter 1 & Parameter 2 – displays zero until first key is pressed after TAP is loaded
2. Topy State, Sub-state, & Playmode – available on screen only
3. Memory - Total, Free, & Available – only Free & Available on front panel display
4. Signal Level & Quality
5. No of TV & Radio Channels
6. Topy internal channel No, UHF channel number & LCN of current main channel
7. List of running TAPs – available on-screen only
8. TAPCOM data – see para 2 below.
9. Memory contents – see para 3 below.

plus the system parameters "Volume", "Menu Language", "Subtitle Language", "Audio Language", "TV Type", "Video Output", "Scart Type", "TV Aspect Ratio", "16:9 Display Format", "Sound Mode", "UHF type", "UHF Channel", "OSD Transparency", "InfoBox Display Time", "InfoBox Position", and "TimeShift" (plus subtitle & Interactive status for TF5800 only).

The front panel display is not always easy to decode due to the limitations of the 7 segment + decimal point, so it is recommended that you use it in conjunction with the on-screen display initially.

### 4 TAPCOM DATA (DATA SELECTION = 8)

This selection allows data from other compatible TAPs to be displayed. At the moment TAP Launcher is the only "useful TAP with that capability, but a demo TAP is included in the zip file.

There are three functions included in Topy Monitor version A4 which are accessible via TAPCOM:

(1) "TopyMonitorShowMessage" - which puts up a screen message which scrolls as necessary and a front panel message which can be:

- \* Single "line" which scrolls as necessary
- \* 2 or 3 lines of <=4 characters which alternate (like Available & Free memory)

In the latter case fullstops (& commas?) do not count in character count.

(2) "TopyMonitorBlankMessage" - no screen message is displayed, & front panel displays "- ---".

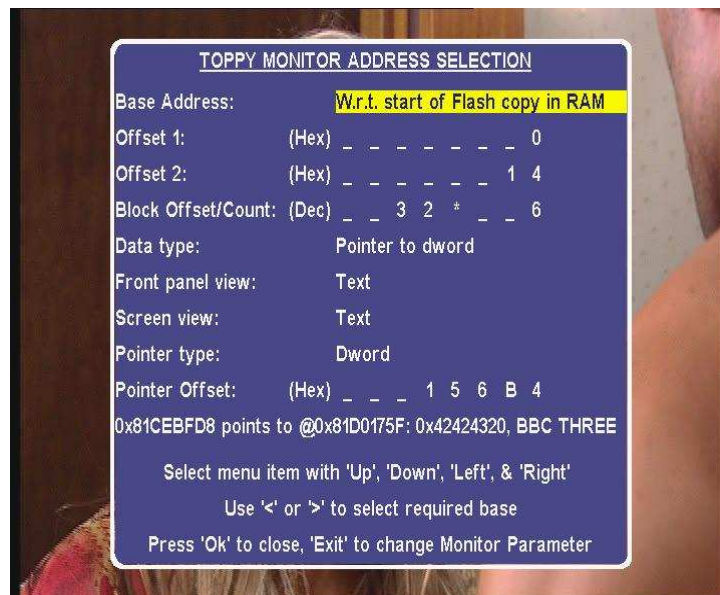
(3) "TopyMonitorNoMessage" - Displays "No TAPCOM message" on screen & front panel displays "----".

At the moment TAPCOM is considered another data item (No 8), and is subject to same display selection rules as any other data item. However I suspect there is a desire to be able to monitor one item with the front panel & TAPCOM with the screen, or v.v. (or should it be completely different selections for screen & front panel at all times??) - feedback please.

The zip file includes source & compiled versions of a TAP designed to demonstrate how this facility can be used, and thus form the basis of additions to any other TAP which may want to use this feature. Details of its use are given in Appendix 1.

## 5 MEMORY MONITORING (DATA SELECTION = 9)

The memory monitor allows contents of any Topypy address in the range 0x80000000 to 0x8FFFFFFF (main memory) or 0xBFC00000 to 0xBFDFEFFF (Flash memory) to be monitored on screen and/or via the front panel. An error message is displayed if you attempt to monitor an address outside that range.



The various options/selections are as follows:

1. Base address definition – this determines whether the address is the true Topypy address, relative to the start of Topypy memory (0x80000000), relative to the start of the copy of the uncompressed flash data in RAM, relative to the start of EEPROM copy in RAM, or relative to the start of the true Flash memory.
2. Offsets from the base address can be defined in using two simple offset values and as a block size and a number of blocks (so the offset is block size \* no of blocks). The sum of the three offsets is used. The last offers an easy way of looking at one parameter in a series of consecutive blocks of data. Each can be defined either using Decimal or Hex notation – use the “Slow Motion” key to toggle between them (which will convert the existing value as necessary).
3. Data item type (byte, word, or dword) & whether to treat the memory contents as the data of interest or a pointer to the data or interest.
4. Front panel presentation (hex, decimal or text). A maximum of 20 characters of text are displayed.
5. Screen presentation ((hex, decimal, text, or all three).
6. Pointer type (byte, word, or dword).
7. Pointer offset. If the resulting pointer value is less than the start of memory, the “Base Address” value is also added automatically with the expectation of bringing the address into the permitted range.

The hex & decimal values can be changed by selecting the relevant digit and “typing” the new value, or by using the “<<” & “>>” keys to decrement & increment the current value.

The on-screen presentation always gives the hex, decimal and text strings associated with the current location. The text string is up to the first null character, or the first 20 characters, whichever comes first.

As an example of use of the above:

1. The TV channel list is in blocks of 32 starting at 4 bytes after the start of the Flash.
2. The Service name pointer is 4 bytes starting 0x10 bytes from the start of each block.
3. The service name pointer value is relative to the start of flash block 10, whose data starts at 0x000156B4 (for the TF5800) after the start of flash memory.

so selecting:

- a. Base address – relative to flash memory
- b. Hex offset of (0x)14 or decimal offset of 20, with the other set to zero.
- c. Block size = 32
- d. Data item type = pointer to byte
- e. Front panel presentation: text
- f. Pointer type: Dword
- g. Pointer offset: 0x000156B4. As the pointer value is always small relative to 0x80000000, this is treated as relative to the base address – i.e. start of flash memory.

will allow you to run through the channel names by selecting the No of blocks and pressing “>>”. The individual ASCII values can be monitored by incrementing the pointer offset.

**N.B.** The memory contents message on the address selection screen is regenerated every time the screen is updated (e.g. with a cursor move), but otherwise is not updated if the referenced memory content changes.

## 6 LOGGING

Pressing “Rec” starts & stops a logging function in which all changes in the currently monitored parameter are recorded in a “TopsyMonitor.xls” file. In spite of the name, this is a text file but is optimised for viewing in a spreadsheet. It is stored in “ProgramFiles/Logs” if such a directory exists, otherwise in “ProgramFiles/”.

## 7 USE WITH TF5000 DISPLAY TAP

Currently these TAPs are mutually exclusive, and the TF5000 Display TAP must be shut down before loading Topsy Monitor (inhibiting with TAP Commander is not adequate). If The TF5000 Display TAP is upgraded to allow it to display other TAP’s messages, I intend to update this TAP to take advantage of that facility if there is a reasonable demand.

## 8 SKINS

The colours used for the various display elements can be changed using a “skin” file called “TapLauncher.mcf” in “ProgramFiles/Settings/Skins/”. If this is not found, “EMJBTaps.mcf” is used, if present. If neither is found, a default colour scheme is used. A copy of a MyStuff skin file can be used, though only the following elements are used:

- “Background=” (normal background)
- “Highlight=” (background for selected menu entry)
- “TextForeground=” (normal text)
- “TextHighlightedForeground=” (selected menu entry text)
- “Frame=” (border round screens)

and all other entries are ignored. The keywords above should be followed by the red, green & blue values (separated by commas) in the range 0-255 with no spaces or final comma (e.g. 255,0,0 for red, 255,255,0 for yellow etc).

## 9 INTERACTION WITH OTHER TAPS

Some other TAPs (e.g. Media Manager) will not load if something has been written onto the screen by another TAP, and so will not load when Topy Monitor displays results on screen. Moving the Topy Monitor display to a different part of the screen may solve this problem, but it may be necessary to use the front panel display only. Many TAPs (e.g. MyStuff and all mine) use other methods to detect other TAP activity and cause no problems.

## 10 ADDITIONAL "INI" FEATURES

The "ini" (in "ProgramFiles/Settings") file can be changed to tweak the appearance as follows:

"FPDT:" defines the front panel display dwell times when alternating between two different parameters (e.g. Free & Available memory figures)

"FPSI:" defines the front panel display scroll interval per character when > 4 characters are to be displayed.

"SSI:" defines the screen display scroll interval per pixel when the message will not fit in the message window.

"UUDI:" defines the user-selected data update interval (one of the update rate options).

"MSML:" defines the maximum length of the screen message window, in pixels.

"LogFileLength:" defines the maximum length of the logging file (default 16384 bytes).

The time intervals are in units of 10 milliseconds. For precise syntax, see the sample file.

## 11 VERSION HISTORY

Alpha 1: Not circulated

Alpha 2: Limited circulation for initial comment.

Alpha 2a: Minor improvements suggested by CW.

Alpha 3: More radical improvements to make it more user friendly, including the extra ".ini" options

Alpha 4A: Addition of TAPCOM interface – limited circulation only

Alpha 4B: Addition of memory monitoring – limited circulation only.

Alpha 4C: Fix for crashing when not reading from dword boundary.

Alpha 4D: Extension of permitted address range to include flash memory  
Additional base memory options.

- Alpha 4E: Fix for random value instead of address display  
Bug fixes & improvements in logging  
Minor presentation changes  
Addition of subtitle & interactive status to list of items which can be monitored
- Beta 1: Fix for skin colour errors and minor bug when used with "RemExt" patch.

12 WARNING

You use this TAP at your own risk – the author cannot accept any responsibility for problems arising.

13 FUTURE ENHANCEMENTS

Feedback as to what you would like, please.

14 ACKNOWLEDGEMENTS

To Deadbeef for use of his front panel display access routines, and R2-D2 for help & encouragement with the memory monitor facilities.

# APPENDIX 1

## TAPCOMTest Operation

Running the "TAPCOMTest" TAP and pressing keys 1-6 have the following effects:

- 1: Non scrolling single FP message:  
Screen message: "TAPCOM Test - Pressed '1' Key"  
FP message: "Test"
- 2: Non scrolling dual FP message:  
Screen message: "TAPCOM Test - Pressed '2' Key"  
FP message: "For"/"You"
- 3: Non scrolling triple FP message + scrolling screen message:  
Screen message: "TAPCOM Test - Pressed '3' Key ....."  
FP message: "To U"/"from"/"EMJB"
- 4: Scrolling single FP message:  
Screen message: "TAPCOM Test - Pressed '4' Key"  
FP message: "TAPCOM scroll test"
- 5: Demo of "TopyMonitorBlankMessage"
- 6: Demo of "TopyMonitorNoMessage"

and Exit closes the TAP.